

This document provides pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.086 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia Water Quality Standards (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained within this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1. Facility Name and Mailing Address: St Louis Wastewater Treatment Plant
P.O. Box 4000
Ashburn, VA 20146
Facility Location: 22151 Newlin Mill Road
Middleburg, VA 20117
Facility Contact Name: Ben Shoemaker
Facility Email Address: bshoemaker@loudounwater.org
SIC Code: 4952 WWTP
County: Loudoun
Telephone Number: (571) 291-7937
2. Permit No.: VA0062189
Other VPDES Permits: Not Applicable (NA)
Other Permits: NA
E2/E3/E4 Status: NA
Expiration Date: 8/30/2016
3. Owner Name: Loudoun County Sanitation Authority dba Loudoun Water
Owner Contact / Title: Ben Shoemaker, Manager of Community Systems
Owner Email Address: bshoemaker@loudounwater.org
Telephone Number: (571) 291-7937
4. Application Complete Date: March 11, 2016
Permit Drafted By: Alison Thompson
Draft Permit Reviewed By: Anna Westernik
Public Comment Period : Start Date:
Date Drafted: July 6, 2016
Date Reviewed: July 18, 2016
End Date:
5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination.
Receiving Stream Name: Beaverdam Creek, UT
Drainage Area at Outfall: 0.59 sq.mi.
Stream Basin: Potomac River
Section: 9
Special Standards: None
7Q10 Low Flow: 0.0 MGD
1Q10 Low Flow: 0.0 MGD
30Q10 Low Flow: 0.0 MGD
Harmonic Mean Flow: 0.0 MGD
Stream Code: 1aXME
River Mile: 0.005
Subbasin: Potomac River
Stream Class: III
Waterbody ID: VAN-A07R; PL11
7Q10 High Flow: 0.0 MGD
1Q10 High Flow: 0.0 MGD
30Q10 High Flow: 0.0 MGD
30Q5 Flow: 0.0 MGD
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

<u> X </u> State Water Control Law <u> X </u> Clean Water Act <u> X </u> VPDES Permit Regulation <u> X </u> EPA NPDES Regulation	<u> X </u> EPA Guidelines <u> X </u> Water Quality Standards _____ Other (PES, Occoquan Policy, Dulles) _____ (GP – note regulation and title)
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7. Licensed Operator Requirements: Class III

8. Reliability Class: Class II

9. Facility / Permit Characterization:

<input type="checkbox"/> Private	<input checked="" type="checkbox"/> Effluent Limited	<input type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input type="checkbox"/> Compliance Schedule
<input type="checkbox"/> State	<input type="checkbox"/> Whole Effluent Toxicity Program	<input type="checkbox"/> Interim Limits in Permit
<input checked="" type="checkbox"/> POTW	<input type="checkbox"/> Pretreatment Program	<input type="checkbox"/> Interim Limits in Other Document
<input checked="" type="checkbox"/> eDMR Participant	<input checked="" type="checkbox"/> Total Maximum Daily Load (TMDL)	

10. Wastewater Sources and Treatment Description:

The St Louis STP serves the small community of St Louis with an approximate population of 200 (approximately 70 connections). There are no known industrial discharges to the STP.

The 0.086 MGD wastewater treatment plant treats the municipal wastewater utilizing bar screening, 3 lagoons, 2 sedimentation basins, tablet chlorination and dechlorination, and post aeration. See Attachment 2 for the site plan and plant process schematic for the existing facility.

TABLE 1 OUTFALL DESCRIPTION				
Number	Discharge Sources	Treatment	Design Flow	Latitude / Longitude
001	Domestic Wastewater	See Section 10	0.086 MGD	39° 00' 21" 77° 47' 45"
See Attachment 3 for (Bluemont, DEQ #216D) topographic map.				

11. Sludge Treatment and Disposal Methods:

St Louis STP's process system utilizes 3 lagoons. These lagoons do not generate sewage sludge.

12. Other Permitted Discharges and Monitoring Stations Located Within Waterbody VAN-A07R:

TABLE 2 LOCATED WITHIN WATERBODY VAN-A07R			
ID / Permit Number	Name	Type	Receiving Stream
1aXGU000.18	DEQ Monitoring Station	Probabalistic	Beaverdam Creek, UT
1aBEC009.08		Ambient	Beaverdam Creek
1aBEC011.19			Beaverdam Creek

13. Material Storage:

TABLE 3 MATERIAL STORAGE		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Aquaward Chlorine tablets	300 tablets	Materials are stored in a shed with spill containment
Sodium Bisulfite (92.3%) tablets	270 tablets	

14. Site Inspection:

Performed by DEQ-NRO Water Compliance staff, Lisa Janovsky, on July 24, 2013 (Attachment 4).

15. Receiving Stream Water Quality and Water Quality Standards:a. Ambient Water Quality Data

This facility discharges to an unnamed tributary (streamcode XME), which has been neither monitored nor assessed. Streamcode XME discharges to another unnamed tributary (streamcode XGN), which discharges to another unnamed tributary (streamcode XGU), which discharges to Beaverdam Creek (streamcode BEC). DEQ freshwater probabilistic monitoring station 1aXGU000.18 is located downstream from Route 790 on streamcode XGU, approximately 0.68 mile downstream from Outfall 001. The following is the water quality summary for this unnamed tributary, as taken from the Final 2014 Integrated Report:

DEQ monitoring stations located in this unnamed tributary (XGU):
freshwater probabilistic monitoring station 1aXGU000.18, downstream from Route 790

Biological and associated chemical monitoring indicates that the aquatic life, fish consumption and wildlife uses are fully supporting. An observed effect is noted for the aquatic life use based on one exceedance of the consensus based probable effects concentration (PEC) sediment screening values for chlordane (17.6 ppb, dry weight).

DEQ ambient monitoring station 1aBEC011.76 is located on Beaverdam Creek at Route 630, approximately 1.14 miles upstream from the confluence of unnamed tributary XGU with Beaverdam Creek. The following is the water quality summary for this segment of Beaverdam Creek, as taken from the Draft 2014 Integrated Report:

DEQ monitoring stations located in this segment of Beaverdam Creek:
ambient water quality monitoring station 1aBEC011.76, at Route 630

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This impairment is nested within the downstream completed bacteria TMDL for Beaverdam Creek. The aquatic life use is considered fully supporting. The fish consumption and wildlife uses were not assessed.

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 4. INFORMATION ON DOWNSTREAM 303(D) IMPAIRMENTS AND TMDLS							
Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
<i>Impairment Information in the 2014 Integrated Report</i>							
Beaverdam Creek	Recreation	<i>E. coli</i>	0.81 mile	Goose Creek Bacteria TMDL 5/1/2003	2.38E+11 cfu/year fecal coliform bacteria 1.50E+11 cfu/year <i>E. coli</i> bacteria*	200 cfu/100 ml fecal coliform 126 cfu/100 ml <i>E. coli</i> * --- 0.086 MGD	---
Goose Creek Reservoir	Fish Consumption	PCBs	24 miles	No	---	---	2018
Goose Creek	Aquatic Life	Benthic Macro-invertebrates	25 miles	Goose Creek Watershed Benthic (Sediment) 04/26/2004	3.9 tons sediment/year**	TSS concentration 30 mg/L --- 0.086 MGD	---

* The WLA is expressed in the TMDL as both cfu/year fecal coliform and *E. coli* bacteria.

**This facility was assigned a total WLA of 19.5 tons/year in the Benthic TMDL for the Goose Creek watershed. This total WLA was calculated based upon the permitted maximum average concentration for TSS (mg/L) and an assumption of the facility operating at five times the design flow. The factor of five for the design flow was used as a conservative measure to build in future growth in the watershed. Although the future growth for the watershed was determined by the design flow of each facility within in the watershed, the future growth is available for both new and expanding permits in the watershed. The actual WLA for this facility without including the future growth is 3.9 tons/year.

This facility discharges to an unnamed tributary of the Beaverdam Creek within the Chesapeake Bay watershed. The receiving stream has been identified in the Chesapeake Bay TMDL; approved by the Environmental Protection Agency (EPA) on December 29, 2010. The TMDL addresses dissolved oxygen (D.O.), chlorophyll a and submerged aquatic vegetation (SAV) impairments in the main stem Chesapeake Bay and its tributaries by establishing nonpoint source load allocations (LAs) and point source wasteload allocations (WLAs) for Total Nitrogen (TN), Total Phosphorus (TP) and Total Suspended Solids (TSS) to meet applicable Virginia Water Quality Standards contained in 9VAC25-260-185.

Implementation of the Chesapeake Bay TMDL is currently accomplished in accordance with the Commonwealth of Virginia's Phase I Watershed Implementation Plan (WIP); approved by EPA on December 29, 2010. The approved WIP recognizes the *General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed of Virginia* (9VAC25-820 et seq.) as controlling the nutrient allocations for non-significant Chesapeake Bay dischargers. The approved WIP states that for non-significant municipal facilities, nutrient WLAs are to be consistent with Code of Virginia procedures, which set baseline WLAs at 2005 permitted design capacity nutrient load levels. In accordance with the WIP, TN and TP WLAs for non-significant facilities are considered aggregate allocations and will not be included in individual permits. The WIP also considers TSS WLAs for non-significant facilities to be aggregate allocations; however, TSS limits are to be included in individual VPDES permits in conformance with the technology-based requirements found in the Clean Water Act. Furthermore, the WIP recognizes that so long as the aggregated TSS permitted loads for all dischargers is less than the aggregated TSS load in the WIP, the individual permit will be consistent with the TMDL.

40 CFR 122.44(d)(1)(vii)(B) requires permits to be written with effluent limits necessary to meet water quality standards and to be consistent with the assumptions and requirements of applicable WLAs. This facility is classified as a non-significant Chesapeake Bay discharger and has not made application for a new or expanded discharge since 2005. It is therefore covered by rule under the 9VAC25-820 regulation. In accordance with the WIP, TN and TP load limits are not included in this individual permit, but are consistent with the TMDL because the current nutrient loads are in conformance with the facility's 2005 permitted design capacity loads. This individual permit includes weekly average TSS limits of 30 mg/L that are in conformance with technology-based requirements and, in turn, are consistent with the Chesapeake Bay TMDL.

In addition, this individual permit contains limits for ammonia, BOD₅ and D.O. which provide protection of instream D.O. concentrations of at least 5.0 mg/L. Furthermore, implementation of the full Chesapeake Bay WIP, including GP reductions combined with actions proposed in other source sectors, is expected to adequately address ambient conditions such that the proposed effluent limits found within this individual permit are consistent with the Chesapeake Bay TMDL and will not cause an impairment or observed violation of the standards for D.O., chlorophyll a or SAV as required by 9VAC25-260-185.

The planning statement is found in Attachment 5.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, an unnamed tributary to Beaverdam Creek, is located within Section 9 of the Potomac River Basin and classified as Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32° C and maintain a pH of 6.0 – 9.0 standard units (S.U.).

The Freshwater Water Quality/Wasteload Allocation Analysis located in Attachment 6 details other water quality criteria applicable to the receiving stream.

Some Water Quality Criteria are dependent on the pH, temperature and total hardness of the receiving stream and/or final effluent. The derived values utilized to determine the criterion are found in Attachment 7.

pH and Temperature for Ammonia Criteria

The fresh water, aquatic life Water Quality Criteria for ammonia is dependent on the instream pH and temperature. Since the effluent may have an impact on the instream values, the pH and temperature values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile pH and temperature values are utilized because they best represent the critical conditions of the receiving stream.

The critical 30Q10 and 1Q10 flows of the receiving stream have been determined to be 0.0 MGD. In cases such as this, effluent pH and temperature data may be utilized to establish the ammonia water quality criteria.

The facility discharges intermittently, so all available daily data from January 2014 to May 2016 was used to derive the 90th percentile annual values for pH. A default value of 15°C was used for the wet season temperature and 25°C was used for the annual temperature since the data sets were limited. See Attachment 7 for the derivation of the 90th percentile value of the effluent pH (8.2 S.U.) data. The 90th percentile pH has shifted slightly higher during the permit term, so it was staff's professional judgement that the updated data be used to derive the ammonia criteria.

Hardness Dependent Metals Criteria

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). There is no hardness data for this facility. Staff guidance suggests using a default hardness value of 50 mg/L CaCO₃ for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 6 are based on this default value.

Bacteria Criteria

The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

E. coli per 100 mL of water shall not exceed the following:

	Geometric Mean ¹
Freshwater <i>E. coli</i> (N/100 mL)	126

¹For a minimum of four weekly samples taken during any calendar month

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, unnamed tributary to Beaverdam Creek, is located within Section 9 of the Potomac River Basin. This section has not been designated with a special standard.

e. Threatened or Endangered Species

The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and protect threatened and endangered species found near the discharge.

DCR, FWS, and DGIF did not request coordination on this permit.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

It is staff's professional judgement that the receiving stream be classified as Tier 1 based on the following: (1) the stream critical flows have been determined to be zero; and (2) at times the stream flow may be comprised of only effluent.

The proposed permit limits have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLAs) are calculated. In this case since the critical 7Q10, 1Q10 and 30Q10 flows have been determined to be zero, the WLAs are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency and statistical characteristics of the effluent data.

a. Effluent Screening

Effluent data obtained from permit application and Discharge Monitoring Reports (DMRs) submitted during the last permitting term has been reviewed and determined to be suitable for evaluation. The following pollutants require a wasteload allocation analysis: Ammonia as N and Total Residual Chlorine.

b. Mixing Zones and Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where: WLA = Wasteload allocation
 C_o = In-stream water quality criteria
 Q_e = Design flow
 Q_s = Critical receiving stream flow
 (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; 30Q10 for ammonia criteria; and 30Q5 for non-carcinogen human health criteria)
 f = Decimal fraction of critical flow
 C_s = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 has been determined to have critical 7Q10, 1Q10 and 30Q10 flows of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o .

c. Effluent Limitations, Outfall 001 – Toxic Pollutants

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N

Staff reevaluated pH and temperature and has concluded it is different than what was used previously to derive ammonia criteria. As result, staff used the new data to determine new ammonia water quality criteria and new wasteload allocations (WLAs). DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage. Since the discharge is intermittent, only the acute WLA was considered in the limit evaluation. The current evaluation (Attachment 8) demonstrates that new limits are necessary to protect water quality; a monthly average of 3.9 mg/L (5.7 mg/L current) and a weekly average of 5.7 mg/L (8.4 mg/L current) are proposed.

The Environmental Protection Agency (EPA) finalized new, more stringent ammonia criteria in August 2013; possibly resulting in significant reductions in ammonia effluent limitations. It is staff's professional judgment that the incorporation of those criteria into the Virginia Water Quality Standards is forthcoming. This and many other facilities may be required to comply with these new criteria during their next respective permit terms. The ammonia criteria will be revisited during the next reissuance.

2) Total Residual Chlorine

Chlorine is used for disinfection and is potentially in the discharge. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated acute WLA to derive limits. No changes are proposed for the chlorine limitations. A monthly average of 0.009 mg/L and a weekly average limit of 0.011 mg/L are proposed for this discharge (Attachment 8). These are the same as the current limitations.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD₅), and pH limitations are proposed.

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD₅), Total Suspended Solids (TSS) limitations are proposed. Dissolved Oxygen and BOD₅ limitations are based on the stream modeling conducted in 1979 (Attachment 9) and are set to meet the water quality criteria for D.O. in the receiving stream. The Total Suspended Solids limits are based on the VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 Secondary Treatment.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170.

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. Only concentration limits are now found in the individual VPDES permit when the facility installs nutrient removal technology. The basis for the concentration limits is 9VAC25-40 – *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* which requires new or expanding discharges with design flows of ≥ 0.04 MGD to treat for TN and TP to either BNR (Biological Nutrient Removal) levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA (State of the Art) levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

Annual monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus are included in this permit. The monitoring is needed to protect the Chesapeake Bay Water Quality Standards and verify assumptions made while developing the Watershed Implementation Plan (WIP) for the Chesapeake Bay TMDL.

f. Effluent Limitations and Monitoring Summary

The effluent limitations are presented in Section 19. Limits were established for Biochemical Oxygen Demand-5 day (BOD₅), Total Suspended Solids (TSS), Ammonia as N, pH, Dissolved Oxygen (D.O.), *E. coli*, and Total Residual Chlorine. Monitoring is included for Flow, Total Kjeldahl Nitrogen (TKN), Nitrates+Nitrites, Influent BOD₅, Influent TSS, Total Nitrogen, and Total Phosphorus.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and then a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

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19. Effluent Limitations/Monitoring Requirements:

Design flow is 0.086 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	1	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	1,3	20 mg/L 6.5 kg/day	30 mg/L 9.8 kg/day	NA	NA	1/W	4H-C
Total Suspended Solids (TSS)	2,8	30 mg/L 9.8 kg/day	45 mg/L 15 kg/day	NA	NA	1/W	4H-C
Dissolved Oxygen (DO)	1,3	NA	NA	6.8 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean) ^a	1,6	126 n/100mL	NA	NA	NA	1/W	Grab
Total Residual Chlorine (after contact tank)	7	NA	NA	1.0 mg/L	NA	3/D at 4-hr Intervals	Grab
Total Residual Chlorine (after dechlorination)	1	0.009 mg/L	0.011 mg/L	NA	NA	3/D at 4-hr Intervals	Grab
Ammonia, as N	1	3.9 mg/L	5.7 mg/L	NA	NA	1/W	4H-C
Total Kjeldahl Nitrogen (TKN)	4,5	NL mg/L	NA	NA	NA	1/YR	4H-C
Nitrate+Nitrite, as N	4,5	NL mg/L	NA	NA	NA	1/YR	4H-C
Total Nitrogen ^b	4,5	NL mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	4,5	NL mg/L	NA	NA	NA	1/YR	4H-C
Influent BOD ₅ ^c	1	NL mg/L	NA	NA	NA	1/YR	Grab
Influent TSS ^c	1	NL mg/L	NA	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Water Quality Standards
2. Professional Judgment
3. Stream Model – Attachment 9
4. GM 14-2011
5. Chesapeake Bay TMDL/WP
6. Beaverdam Creek Bacteria TMDL
7. DEQ Disinfection Guidance
8. 40 CFR Pt 133

MGD = Million gallons per day.

NA = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

3/D = Three per day at 4 hr intervals.

1/D = Once every day.

1/W = Once per week.

1/YR = Once every calendar year.

4H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 4-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of four (4) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum four (4) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15 minutes.

a. Samples shall be collected between 10:00 a.m. and 4:00 p.m.

b. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite.

c. At least 85% removal for BOD and TSS shall be attained for this effluent.

20. Other Permit Requirements:

- a. Part I.B. of the Permit Contains Quantification Levels and Compliance Reporting Instructions.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an instream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

21. Other Special Conditions:

- a. 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b. Indirect Dischargers. Required by VPDES Permit Regulation, 9VAC25-31-200.B.1 and B.2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
- c. O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- d. CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct (CTC) prior to commencing construction and to obtain a Certificate to Operate (CTO) prior to commencing operation of the treatment works.
- e. Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200.C., and by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class III operator.
- f. Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of II.
- g. Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220.D requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.
- h. Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- i. Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720 and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.
- j. Nutrient Reopener. 9VAC25-40-70.A. authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390.A. authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

- k. Minimum Instream Flow Requirement Discharge is to halt when flow in Beaverdam Creek at the Route 790 Bridge becomes equal to or less than 0.086 MGD. Compliance with this requirement shall be met by measuring the flow daily at the Route 790 Bridge, during and at least one day prior to a scheduled discharge. Flow shall be determined by comparing staff gauge measurements made at the downstream head wall of the Route 790 Bridge to the 1992 rating curves developed by the Loudoun County Sanitation Authority (LCSA). This method was proposed by LCSA on June 20, 1991, and approved by DEQ on December 3, 1991. Appropriate rating curves were established by LCSA in 1992 and shall be used for determination of a stream flow rate.
- l. Groundwater Monitoring. The previous permit required the permittee to perform semiannual groundwater monitoring on MW1 (background), MW 2, MW 3, MW 4, MW 5, and MW 6. A summary of the data may be found in Attachment 10; there have been no definitive trends noted in any of the wells. For the reissuance of this permit, the monitoring frequency shall remain semiannual. The permittee shall continue the groundwater sampling and reporting of the data obtained in accordance with the groundwater monitoring plan on a semiannual basis. Any changes to the monitoring plan shall be submitted to this office and approved prior to their implementation. If monitoring results indicate that any unit has contaminated the ground water, the permittee shall submit a corrective action plan within 60 days of being notified by the regional office. The plan shall set forth the steps to be taken by the permittee to ensure that the contamination source is eliminated or that the contaminant plume is contained on the permittee's property. In addition, based on the extent of contamination, a risk analysis may be required. Once approved, this plan and/or analysis shall be incorporated into the permit by reference and become an enforceable part of this permit.
- m. Total Maximum Daily Load (TMDL) Reopener. Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream.

22. Permit Section Part II.

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

- a. Special Conditions:
 - 1) The requirement to replace the stream gage was removed since the permittee replaced the gage at the Route 790 Bridge.
- b. Monitoring and Effluent Limitations:
 - 1) Based on the updated 90th percentile pH of the effluent, the ammonia criteria and subsequent Ammonia as N effluent limitations were revised.
 - 2) Annual monitoring for Total Nitrogen, Total Phosphorus, Nitrates+Nitrites, and Total Kjeldahl Nitrogen were added to the effluent monitoring.

24. Variances/Alternate Limits or Conditions:

Not applicable.

25. Public Notice Information:

First Public Notice Date:

Second Public Notice Date:

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected and copied by contacting the: DEQ Northern Regional Office; 13901 Crown Court; Woodbridge, VA 22193; Telephone No. 703-583-3834, alison.thompson@deq.virginia.gov. See Attachment 11 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for

public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:

Previous Board Action(s): There have been no recent board actions.

Staff Comments: No comments.

State/Federal Agency Comments: No comments.

Public Comments:

Owner Comments: